

# YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT

1947 Galileo Court , Suite 103; Davis, CA 95618

## Diesel Fired Emergency Internal Combustion Engine Emission Evaluation and Statement of Basis Addendum

**ENGINEER:** Kyle Rohlfing

**COMPANY NAME:** California State Prison - Solano

**ENGINE LOCATION:** The engine is located at 2100 Peabody Road in Vacaville. The engine is not located within 1,000 feet of a K-12 school and is not subject to the requirements of H&S 42301.6.

**PROPOSAL:** The applicant is proposing to modify P-27-95 to increase maintenance and testing hours of operation for the engine.

**PROCESS:** The engine is used to power an emergency generator

**FLOW DIAGRAM:** None required.

**EQUIPMENT:** 960 BHP diesel fired Detroit Diesel IC engine, Model No. 16V-92T 8163-7305, Serial No. 16VF006390, Model Year 1985, Non-Certified Engine

**CONTROL EQUIPMENT:** Turbocharger

ATC # C-11-13  
SIC Code # 9223  
UTM E 589.4 km  
UTM N 4241.6 km

### APPLICATION DATA:

<u>Operating Schedule</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Max. Daily Operation =	24 hours/day	Td	Applicant
Max. 1st Quarter Operation =	200 hours/quarter	T1	Applicant
Max. 2nd Quarter Operation =	200 hours/quarter	T2	Applicant
Max. 3rd Quarter Operation =	200 hours/quarter	T3	Applicant
Max. 4th Quarter Operation =	200 hours/quarter	T4	Applicant
Max. Yearly Operation =	200 hours/year	Ty	Applicant

  

<u>Engine Data</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Maximum BHP Rating =	960 BHP	HP	Manufacturer's Data
Exhaust Volume =	6,850 ACFM	EV	Manufacturer's Data
Exhaust Temperature =	1,270 Degrees Rankine (F+460)	ET	Manufacturer's Data
Hourly Fuel Consumption =	52.0 Gallons	FT	Manufacturer's Data

### ASSUMPTIONS:

	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Sulfur Content of Fuel =	0.0015 %	SC	CARB Certified Diesel
Standard Temperature =	528 Degrees Rankine (F+460)	ST	STAPPA-ALAPCO, Pg. 1-7 (5/30/91)
Moisture Content =	10 %	PM	STAPPA-ALAPCO, Pg. 1-7 (5/30/91)
BTU Content =	19,300 BTU/lb	BC	AP-42, Table 3.4-1(a) (10/96)
Density =	7.1 lb/gallon	DE	AP-42, Table 3.4-1(a) (10/96)
Mass Conversion =	453.6 g/lb	GM	District

### Diesel Particulate Control

	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Particulate Controls =	No		Applicant
Baseline Reduction =	0 %	CE	Manufacturer's Data

### EMISSION FACTORS:

	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
VOC =	0.24 g/bhp-hr	EFvoc	Manufacturer's Data
CO =	2.00 g/bhp-hr	EFco	Manufacturer's Data
NOx =	13.83 g/bhp-hr	EFnox	Manufacturer's Data
SOx =	0.0055 g/bhp-hr	EFsox	AP-42, Table 3.4-1 (10/96) *
TSP/PM10 =	0.82 g/bhp-hr	EFpm	AP-42, Table 3.3-1 (5/91)**

\* Only the emission factor listed in Table 3.4-1 is used since it assumes all fuel bound sulfur is converted to SOx.

\*\* All particulate matter is assumed to be less than 1 micrometer aerodynamic diameter (AP-42, Section 3.3). Emission factor in g/bhp-hr calculated from factor given in lb/gal as (0.0335 lb/gal) \* FT \* GM / HP

### CALCULATIONS:

#### 1. Determine the Permitted Diesel Fuel Limits:

Daily Diesel Limit = Td \* FT = 1,248 gallons  
1st Quarter Diesel Limit = T1 \* FT = 10,400 gallons

2nd Quarter Diesel Limit = T2 * FT =	10,400 gallons
3rd Quarter Diesel Limit = T3 * FT =	10,400 gallons
4th Quarter Diesel Limit = T4 * FT =	10,400 gallons
Yearly Diesel Limit = Ty * FT =	10,400 gallons

## 2. Determine Dry Standard Cubic Feet of Exhaust:

$$\text{DSCFM Exhaust} = \text{EV} * \text{ST/ET} * (100\% - \text{PM}) = 2,563.1 \text{ dscfm}$$

Formula  
Symbol  
SCFM

## 3. Determine Yearly MMBtu combusted in Engine for Toxics:

$$\text{Yearly MMBtu} = \text{Ty} * \text{FT} * \text{DE} * \text{BC} * (1 \text{ MMBtu}/1,000,000 \text{ Btu}) = 1,425.1 \text{ MMBtu/year}$$

## EMISSION CALCULATIONS:

### 1. Determine VOC Emissions:

Max Daily VOC Emissions = Td * HP * EFvoc * (1 lb/453.6 g) =	12.4 lb/day
1st Quarter VOC Emissions = T1 * HP * EFvoc * (1 lb/453.6 g) =	103 lb/quarter
2nd Quarter VOC Emissions = T2 * HP * EFvoc * (1 lb/453.6 g) =	103 lb/quarter
3rd Quarter VOC Emissions = T3 * HP * EFvoc * (1 lb/453.6 g) =	103 lb/quarter
4th Quarter VOC Emissions = T4 * HP * EFvoc * (1 lb/453.6 g) =	103 lb/quarter
Max Yearly VOC Emissions = Ty * HP * EFvoc * (1 lb/453.6 g) * (1 ton/2,000 lb) =	0.05 tons/year

### 2. Determine CO Emissions:

Max. Daily CO Emissions = Td * HP * EFco * (1 lb/453.6 g) =	101.6 lb/day
1st Quarter CO Emissions = T1 * HP * EFco * (1 lb/453.6 g) =	847 lb/quarter
2nd Quarter CO Emissions = T2 * HP * EFco * (1 lb/453.6 g) =	847 lb/quarter
3rd Quarter CO Emissions = T3 * HP * EFco * (1 lb/453.6 g) =	847 lb/quarter
4th Quarter CO Emissions = T4 * HP * EFco * (1 lb/453.6 g) =	847 lb/quarter
Max. Yearly CO Emissions = Ty * HP * EFco * (1 lb/453.6 g) * (1 ton/2,000 lb) =	0.42 tons/year

### 3. Determine NOx Emissions:

Max. Hourly NOx Emissions = HP * EFnox * (1 lb/453.6 g) =	29.27 lb/hour
Max. Daily NOx Emissions = Td * HP * EFnox * (1 lb/453.6 g) =	702.5 lb/day
1st Quarter NOx Emissions = T1 * HP * EFnox * (1 lb/453.6 g) =	5,854 lb/quarter
2nd Quarter NOx Emissions = T2 * HP * EFnox * (1 lb/453.6 g) =	5,854 lb/quarter
3rd Quarter NOx Emissions = T3 * HP * EFnox * (1 lb/453.6 g) =	5,854 lb/quarter
4th Quarter NOx Emissions = T4 * HP * EFnox * (1 lb/453.6 g) =	5,854 lb/quarter
Max. Yearly NOx Emissions = Ty * HP * EFnox * (1 lb/453.6 g) * (1 ton/2,000 lb) =	2.93 tons/year

### 4. Determine SOx Emissions:

Max. Hourly SOx Emissions = HP * EFsox * (1 lb/453.6 g) =	0.01 lb/hour
Max. Daily SOx Emissions = Td * HP * EFsox * (1 lb/453.6 g) =	0.3 lb/day
1st Quarter SOx Emissions = T1 * HP * EFsox * (1 lb/453.6 g) =	2 lb/quarter
2nd Quarter SOx Emissions = T2 * HP * EFsox * (1 lb/453.6 g) =	2 lb/quarter
3rd Quarter SOx Emissions = T3 * HP * EFsox * (1 lb/453.6 g) =	2 lb/quarter
4th Quarter SOx Emissions = T4 * HP * EFsox * (1 lb/453.6 g) =	2 lb/quarter
Max. Yearly SOx Emissions = Ty * HP * EFsox * (1 lb/453.6 g) * (1 ton/2,000 lb) =	0.00 tons/year

### 5. Determine TSP/PM10 Emissions:

Max. Hourly TSP/PM10 Ems. = HP * EFpm * (1 lb/453.6 g) * (100%-CE) =	1.74 lb/hour
Max. Daily TSP/PM10 Ems. = Td * HP * EFpm * (1 lb/453.6 g) * (100%-CE) =	41.8 lb/day
1st Quarter TSP/PM10 Ems. = T1 * HP * EFpm * (1 lb/453.6 g) * (100%-CE) =	348 lb/quarter
2nd Quarter TSP/PM10 Ems. = T2 * HP * EFpm * (1 lb/453.6 g) * (100%-CE) =	348 lb/quarter
3rd Quarter TSP/PM10 Ems. = T3 * HP * EFpm * (1 lb/453.6 g) * (100%-CE) =	348 lb/quarter
4th Quarter TSP/PM10 Ems. = T4 * HP * EFpm * (1 lb/453.6 g) * (100%-CE) =	348 lb/quarter
Yearly TSP/PM10 Ems. = Ty * HP * EFpm * (1 lb/453.6 g) * (1 ton/2,000 lb) * (100%-CE) =	0.17 tons/year

### 6. Determine Particulate Matter Emission Concentration:

$$\text{PM Conc.} = [\text{PM lb/hr}] * (7,000 \text{ grains/lb}) * (1 \text{ hr}/60 \text{ min}) * (1/\text{SCFM}) = 0.1 \text{ gr/dscf}$$

### 7. Determine SOx Emission Concentration:

$$\text{SOx \%} = [\text{SOx lb/hr}] * (385 \text{ scf/lb-mole}) * (\text{lb-mole}/64 \text{ lb}) * (1 \text{ hr}/60 \text{ min}) * (1/\text{SCFM}) * 100\% = 0.00005 \%$$

### 8. Determine Particulate Matter Emission Rate:

Formula  
Symbol

PM Emission Rate = Ty \* HP \* EFpm \* (1 year/8,760 hrs) \* (1 hr/3,600 sec) \* (100%-CE) = 0.0050 grams/sec ER

#### RULE & REGULATION COMPLIANCE EVALUATION:

##### District Rule 2.3-Ringelmann

The version of the rule used in this evaluation is the rule adopted on October 1, 1971, and is part of the California State Implementation Plan (SIP). The source is currently in compliance with the requirements of the rule.

**1. Requirement:** The Permit Holder shall not discharge into the atmosphere from any single source of emission whatsoever, any air contaminant for a period or periods aggregating more than three (3) minutes in any one (1) hour which is:

a. As dark or darker in shade as that designated as No. 2 on the Ringelmann Chart as published by the United States Bureau of Mines; or

b. Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection a. of this condition. [District Rule 2.3]

**Subsuming Demonstration:** The requirements of the rule can be streamlined by a Rule 3.4, New Source Review condition

**Subsuming condition:** The Permit Holder shall not discharge into the atmosphere any air contaminant for a period or periods aggregating more than 3 minutes in any one hour which is:

a. As dark or darker in shade than No. 1 on the Ringelmann Chart; or

b. Greater than 20% opacity. [District Rule 3.4/C-11-13]

##### District Rule 2.5-Nuisance

The operation is expected to comply with the rule requirement of no discharge which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or the public. A condition will not be placed on the ATC, but will be added to the PTO upon implementation.

##### District Rule 2.11-Particulate Matter

This rule was updated 1/13/10, however the rule has not yet been approved as part of the SIP, therefore the previous (SIP-approved) version was evaluated here.

**1. Requirement:**

<u>Emission Rate (gr/dscf)</u>	<u>Allowable Rate (gr/dscf)</u>	<u>Compliance</u>
0.1	0.1	Yes

**Subsuming Demonstration:** The emissions of particulate matter will be limited to the evaluated rates under Rule 3.4, New Source Review. The Rule 3.4 requirement of 0.08 gr/dscf will subsume the rule 2.11 requirement of 0.1 gr/dscf.

**Subsuming Condition:** The PM10 emissions from the engine shall not exceed 41.8 lb/day, 348 lb/1st calendar quarter, 348 lb/2nd calendar quarter, 348 lb/3rd calendar quarter, 348 lb/4th calendar quarter, and 0.17 tons/calendar year. [District Rule 3.4/C-11-13]

##### District Rule 2.12, Section A-Sulfur Compounds

This rule was updated 1/13/10, however the rule has not yet been approved as part of the SIP, therefore the previous (SIP-approved) version was evaluated here.

**1. Requirement:**

<u>Emission Rate (% SOx as SO2)</u>	<u>Allowable Rate (% SOx as SO2)</u>	<u>Compliance</u>
0.00005	0.2	Yes

**Subsuming Demonstration:** The emissions of sulfur oxides will be limited to the evaluated rates under Rule 3.4, New Source Review. The Rule 3.4 requirement of 0.00005% will subsume the rule 2.11 requirement of 0.2%.

**Subsuming Condition:** The SOx emissions from the engine shall not exceed 0.3 lb/day, 2 lb/1st calendar quarter, 2 lb/2nd calendar quarter, 2 lb/3rd calendar quarter, 2 lb/4th calendar quarter, and negligible tons/calendar year. [District Rule 3.4/C-11-13]

##### District Rule 2.16 - Fuel Burning or Power Generation

The version of the rule used in this evaluation is the rule adopted on October 1, 1971, and is part of the California State Implementation Plan (SIP). The source is currently in compliance with the requirements of the rule.

**1. Requirement:**

<u>Pollutant</u>	<u>Allowable</u>	<u>Actual</u>	<u>Compliance</u>
SOx	200 lb/hr	0.01 lb/hr	Yes
NOx	140 lb/hr	29.27 lb/hr	Yes
PM	40 lb/hr	1.74 lb/hr	Yes

**Subsuming Demonstration:** The emissions of pollutants will be limited to the evaluated rates under Rule 3.4, New Source Review. The Rule 3.4 requirements will subsume the rule 2.16 requirements.

**Subsuming Conditions:**

The SOx emissions from the engine shall not exceed 0.3 lb/day, 2 lb/1st calendar quarter, 2 lb/2nd calendar quarter, 2 lb/3rd calendar

quarter, 2 lb/4th calendar quarter, and negligible tons/calendar year. [District Rule 3.4/C-11-13]

The NOx emissions from the engine shall not exceed 702.5 lb/day, 5,854 lb/1st calendar quarter, 5,854 lb/2nd calendar quarter, 5,854 lb/3rd calendar quarter, 5,854 lb/4th calendar quarter, and 2.93 tons/calendar year. [District Rule 3.4/C-11-13]

The PM10 emissions from the engine shall not exceed 41.8 lb/day, 348 lb/1st calendar quarter, 348 lb/2nd calendar quarter, 348 lb/3rd calendar quarter, 348 lb/4th calendar quarter, and 0.17 tons/calendar year. [District Rule 3.4/C-11-13]

#### **District Rule 2.32-Stationary Internal Combustion Engines**

This rule was adopted 10/10/01 and is included in the SIP. As shown below, the source is in compliance with the requirements of the rule. The engine will have limited hours per year for maintenance operations and 200 hours per year for total use, and is therefore exempt from the rule (except Section 503) pursuant to Section 110.3. Section 503 requires that the source maintain a log of the engine's operating hours and that the log be retained for two years. This requirement will be superseded by the recordkeeping requirement of the Airborne Toxic Control Measure (see below).

**1. Requirement:** An owner or operator claiming an exemption under Sections 110.2 or 110.3 of this Rule shall maintain a log of operating hours for each engine. The log of operating hours shall be retained for two years and be made available to the Air Pollution Control Officer upon request.

**Subsuming Demonstration:** The record keeping requirement is less restrictive than the record keeping requirements of applicable regulations of the State of California. A more stringent record keeping condition will be added to the permit and made federally enforceable by the authority of Rule 3.4, New Source Review. A more stringent record retention condition is required by District Rule 3.8, Federal Operating Permits.

#### **Subsuming Conditions:**

The owner or operator is required to maintain a monthly log that lists the following information: emergency hours of operation, maintenance and testing hours of operation, emission testing hours of operation, initial startup hours, and fuel use through fully documented purchase records. [Title 17 CCR Section 93115 and District Rule 3.4/C-11-13]

All required records shall be retained for a minimum of five (5) years and shall be made available for District inspection upon request. [District Rule 3.8, section 302.6(b)/C-11-13]

#### **District Rule 3.4-New Source Review**

#### **PROPOSED EMISSION SUMMARY FOR NEW OR MODIFIED PERMIT**

	<u>Daily</u>	<u>Yearly</u>	
VOC	12.4 lb	0.05 tons	Use for annual billing
CO	101.6 lb	0.42 tons	Use for annual billing
NOx	702.5 lb	2.93 tons	Use for annual billing
SOx	0.3 lb	0.00 tons	Use for annual billing
PM10	41.8 lb	0.17 tons	Use for annual billing

	<u>Quarterly</u>			
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	103	103	103	103
CO (lb)	847	847	847	847
NOx (lb)	5,854	5,854	5,854	5,854
SOx (lb)	2	2	2	2
PM10 (lb)	348	348	348	348

#### **Previous quarterly potential to emit for modified permit\***

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	25	25	25	25
CO (lb)	56	56	56	56
NOx (lb)	259	259	259	259
SOx (lb)	4	4	4	4
PM10 (lb)	18	18	18	18

\* From P-27-95

#### **Historic potential emissions for modified permit\***

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	25	25	25	25
CO (lb)	56	56	56	56
NOx (lb)	259	259	259	259
SOx (lb)	4	4	4	4
PM10 (lb)	18	18	18	18

\* The throughput report from 2009 documented 770 gallons of diesel fuel, which was 139 % of permitted throughput. Therefore, because the historic emissions are over 80% in at least one year out of the last five, the historic potential equals the previous potential to emit.

<u>Pollutant</u>	<u>Trigger (lb/day)</u>	<u>BACT Proposed (lb/day)</u>	<u>Quarterly Increase</u>	<u>BACT Trigger</u>
VOC	10	12	No*	No
CO	250	102	No*	No
NOx	10	702	No*	No
SOx	80	0	No*	No
PM10	80	42	No*	No

\* The engine was previously limited by the permit only in the hours for maintenance and testing operation with no limit for emergency use operation. Because the modified permit will now limit operation for any reason to 200 hours per year, the District expects there will not be a quarterly increase in potential to emit for any pollutant.

#### OFFSETS

##### Quarterly permitted emissions for other permits at the stationary source\*

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	19,839	19,946	20,142	20,096
CO (lb)	44,306	44,612	44,918	44,918
NOx (lb)	35,187	35,515	35,781	35,781
SOx (lb)	499	507	510	510
PM10 (lb)	4,621	4,658	4,709	4,700

\* Per Policy 28, the calculated PTE for all other permitted units not including emergency-use IC engines.

##### Quarterly permitted emissions for the stationary source including proposed emissions\*

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	19,839	19,946	20,142	20,096
CO (lb)	44,306	44,612	44,918	44,918
NOx (lb)	35,187	35,515	35,781	35,781
SOx (lb)	499	507	510	510
PM10 (lb)	4,621	4,658	4,709	4,700

\* Per Policy 28, since the proposed IC engine is to be used for emergency purposes, the unit's proposed PTE will not be included in the facility's total quarterly PTE calculations.

#### Offset triggers

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	7,500	7,500	7,500	7,500
CO (lb)	49,500	49,500	49,500	49,500
NOx (lb)	7,500	7,500	7,500	7,500
SOx (lb)	13,650	13,650	13,650	13,650
PM10 (lb)	13,650	13,650	13,650	13,650

#### Quantity of offsets required \*

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	0	0	0	0
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

\* The engine meets the requirements of District Rule 3.4, Section 110 and is exempt from offset requirements.

#### MAJOR MODIFICATION

##### Facility Total Potential to Emit\*

36.93 TPY VOC  
83.38 TPY CO  
78.73 TPY NOx  
1.10 TPY SOx  
9.87 TPY PM10

##### Major Source Thresholds

25 TPY VOC  
100 TPY CO  
25 TPY NOx  
100 TPY SOx  
100 TPY PM10

\* See attached quarterly PTE determination

##### Last five year emission aggregate\*

0.79 TPY VOC  
2.46 TPY CO  
13.14 TPY NOx  
0.01 TPY SOx  
1.03 TPY PM10

##### Major Modification Thresholds

25 TPY VOC  
100 TPY CO  
25 TPY NOx  
40 TPY SOx  
25 TPY PM10

\* See attached 5 year aggregate worksheet

**Result: The proposed modification is not a major modification**

#### PUBLIC NOTICE

##### "Increase in historic potential to emit"

##### Exemption level for notification

78 lb VOC/quarter  
791 lb CO/quarter  
5,595 lb NOx/quarter  
-2 lb SOx/quarter  
330 lb PM10/quarter

7,500 lb VOC/quarter  
49,500 lb CO/quarter  
7,500 lb NOx/quarter  
13,650 lb SOx/quarter  
13,650 lb PM10/quarter

**Result: Public notice is not required**

**1. Requirement:**

The VOC emissions from the engine shall not exceed 12.4 lb/day, 103 lb/1st calendar quarter, 103 lb/2nd calendar quarter, 103 lb/3rd calendar quarter, 103 lb/4th calendar quarter, and 0.05 tons/calendar year. [District Rule 3.4/C-11-13]

**2. Requirement:**

The CO emissions from the engine shall not exceed 101.6 lb/day, 847 lb/1st calendar quarter, 847 lb/2nd calendar quarter, 847 lb/3rd calendar quarter, 847 lb/4th calendar quarter, and 0.42 tons/calendar year. [District Rule 3.4/C-11-13]

**3. Requirement:**

The NOx emissions from the engine shall not exceed 702.5 lb/day, 5,854 lb/1st calendar quarter, 5,854 lb/2nd calendar quarter, 5,854 lb/3rd calendar quarter, 5,854 lb/4th calendar quarter, and 2.93 tons/calendar year. [District Rule 3.4/C-11-13]

**4. Requirement:**

The SOx emissions from the engine shall not exceed 0.3 lb/day, 2 lb/1st calendar quarter, 2 lb/2nd calendar quarter, 2 lb/3rd calendar quarter, 2 lb/4th calendar quarter, and negligible tons/calendar year. [District Rule 3.4/C-11-13]

**5. Requirement:**

The PM10 emissions from the engine shall not exceed 41.8 lb/day, 348 lb/1st calendar quarter, 348 lb/2nd calendar quarter, 348 lb/3rd calendar quarter, 348 lb/4th calendar quarter, and 0.17 tons/calendar year. [District Rule 3.4/C-11-13]

**6. Requirement:**

The maximum diesel fuel consumption of the engine shall not exceed 1,248 gallons/day, 10,400 gallons/1st calendar quarter, 10,400 gallons/2nd calendar quarter, 10,400 gallons/3rd calendar quarter, 10,400 gallons/4th calendar quarter, and 10,400 gallons/calendar year. [District Rule 3.4/C-11-13]

**7. Requirement:**

The source is not allowed to operate the engine more than 200 hours per calendar year. [District Rule 3.4, Section 110.2/C-11-13]

**8. Requirement:**

The source is not allowed to operate the engine for the supplying of power to a serving utility for distribution on the grid. [District Rule 3.4, Section 110.3/C-11-13]

**9. Requirement:**

Other than for maintenance and testing purposes, the source is limited to operating the engine only for actual interruptions of electrical power by the serving utility. [District Rule 3.4, Section 110.4/C-11-13]

**10. Requirement:**

The Permit Holder shall not discharge into the atmosphere any air contaminant for a period or periods aggregating more than 3 minutes in any one hour which is:

- a. As dark or darker in shade than No. 1 on the Ringelmann Chart; or
- b. Greater than 20% opacity. [District Rule 3.4/C-11-13]

**11. Requirement:**

The engine shall only be fueled with CARB certified diesel fuel. [District Rule 3.4/C-11-13]

**12. Requirement:**

The Permit Holder shall install and maintain a non-resettable hour meter with a minimum display capability of 9,999 hours. [District Rule 3.4/C-11-13]

**13. Requirement:**

The Permit Holder shall not operate the IC engine more than 40 hours per calendar year for maintenance and testing purposes, and such operation shall be scheduled in cooperation with the District so as to limit air quality impact. [District Rule 3.4/C-11-13]

**14. Requirement:**

The owner or operator is required to maintain a monthly log that lists the following information: emergency hours of operation, maintenance and testing hours of operation, emission testing hours of operation, initial startup hours, and fuel use through fully documented purchase records. [Title 17 CCR Section 93115 and District Rule 3.4/C-11-13]

**District Rule 3.8-Federal Operating Permits**

This rule implements the requirements of Title V of the Federal CAA as amended in 1990 for permits to operate. Title V provides for the establishment of operating permit programs for sources which emit regulated air pollutants, including attainment and non-attainment pollutants.

The source is in compliance with the requirements of this rule. The source currently has one proposed change for which the District is issuing an ATC, which is being processed according to the District's Enhanced NSR guidelines in District Rule 3.4, Section 404.

In accordance with District Rule 3.8, section 409, a minor permit modification requires that the District provide written notice, proposed permit, and District Analysis to the USEPA, California Air Resources Board, all interested parties and agencies, and the source. The proposed permit will have the required regulatory review period.

Upon implementation of the District ATC into a PTO, the source may submit a written request for District action to amend the Title V operating permit pursuant to District Rule 3.8, section 404.1. Since the District ATC has been processed according to enhanced NSR guidelines, upon written request by the source, the District shall incorporate the changes into the Title V permit as an administrative permit amendment pursuant to District Rule 3.8, section 412.1.

**1. Requirement:**

All required records shall be retained for a minimum of five (5) years and shall be made available for District inspection upon request. [District Rule 3.8, section 302.6(b)/C-11-13]

**District Rule 3.20-Ozone Transport Mitigation**

This emissions unit is exempt from Rule 3.4, Sections 302 and 303. Therefore, per Section 110.3 of this rule, this application is exempt from the requirements of this rule.

**New Source Performance Standards-40 CFR, Part 60, Subpart IIII (Stationary Compression Ignition Internal Combustion Engines)**

The engine is not subject to the NSPS subpart based on the date of engine installation.

**National Emission Standards for Hazardous Air Pollutants-40 CFR, Part 63, Subpart ZZZZ (Stationary Reciprocating Internal Combustion Engines)**

The engine is located at an area source of HAP and is therefore subject to this NESHAP subpart. According to section 63.6590(b)(3) this engine does not have to meet the requirements of this subpart because it is an existing institutional emergency stationary engine.

**Title 17 CCR Section 93115-Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines**

The regulation requires that the engine comply with the following conditions that will be placed on the permit under the authority of Rule 3.4, New Source Review:

- The engine owner or operator will only refuel the engine with California Air Resources Board certified diesel fuel.
- Per the ATCM amendments that became effective on May 19, 2011 (Section 93115.6 (b)(3)(A)(1)(a), owners or operators of in-use emergency engines located at healthcare facilities that have a PM emission factor greater than 0.40 g/bhp-hr, shall not operate the engine more than 40 hours per year for certification, maintenance, and testing purposes. The District has determined that the California State Prison - Solano qualifies as a healthcare facility because it provides healthcare services to inmates separate from the California Medical Facility.
- A non-resettable hour meter shall be installed with a minimum display capability of 9,999 hours.
- The owner or operator is required to maintain a monthly log that lists the following information: emergency hours of operation, maintenance and testing hours of operation, emission testing hours of operation, initial startup hours, and fuel use through fully documented purchase records.

**District Risk Management Plan and Risk Assessment Guidelines (RMPRAG)**

The engine was previously limited by the permit only in the hours for maintenance and testing operation with no limit for emergency use operation. Because the modified permit will now limit operation for any reason to 200 hours per year, the District expects there will not be an increase in emissions of any hazardous air pollutants. As allowed by the RMPRAG policy, no toxics review is required for the facility.

**COMMENTS:**

- BACT is not triggered
- T-BACT is not triggered
- NSR public notice is not required
- Offsets are not required
- Rule 3.20 mitigation is not required
- Title V regulatory notice is required

**RECOMMENDATIONS:**

Perform the regulatory notice

Engineer: \_\_\_\_\_

*Kyle Rohlfing*

Date: 7/18/11

Reviewed by: \_\_\_\_\_

*Susan K O'Meara*

Date: 7/18/11

# New Source Review

## Quarterly Potential To Emit Determination

NSR Version 8/13/97

Evaluation to be used on existing permits to obtain their quarterly PTE.

Engineer/Evaluator: Kyle Rohlfing

SIC Code # 9223

Facility Name: California Medical Facility, California State Prison - Solano, and Prison Industry Authority

Date of Initial Quarterly PTE Determination: 09/18/1998

Location: 1600 California Drive and 2100 Peabody Road; Vacaville, CA

Date of Previous Quarterly PTE Determination: 04/08/2011

Date of Current Quarterly PTE Determination: 06/20/2011

## CURRENT APPLICATIONS:

ATC's

C-11-13, C-11-14, C-11-15, C-11-16, C-11-17

PTO's

Current Permits:	VOC Emissions				CO Emissions				NOx Emissions				SOx Emissions				PM10 Emissions			
	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	Annual (TPV)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	Annual (TPV)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	Annual (TPV)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	Annual (TPV)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	Annual (TPV)
<b>Prison Industry Authority</b>																				
Coating: Metal Parts	577	588	618	1,203	0	0	0	0	0	0	0	0	0	0	0	0	197	199	206	206
Coating: Metal Parts	1,067	1,063	1,108	1,062	0	0	0	0	0	0	0	0	0	0	0	0	296	294	305	296
Combustion Emission Cap	22	23	23	0.05	344	348	351	351	409	414	418	0.83	2	2	3	0.00	31	31	32	32
Enclosed Steel Shot Blasting	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	5	5	5	5
P-77-92(a)	130	130	130	0.24	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	0	0	0	0
C-10-123	130	130	130	0.24	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	0	0	0	0
Institutional Laundry	34	34	34	0.06	135	135	135	0.23	643	643	643	1.11	4	4	4	0.01	77	77	77	77
Coating: Automotive	2,153	2,153	2,153	2,153	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	306	306	306	306
Coating: Automotive	1,619	1,637	1,655	1,655	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	210	213	215	215
P-53-88(a)	5,603	5,619	5,722	5,676	479	483	486	1,854	1,052	1,057	1,061	3,879	6	6	6	30	1,122	1,126	1,146	1,137
PIA Pre-Project SSPE (lb/year)	5,602	5,618	5,721	5,675	479	483	486	1,854	1,052	1,057	1,061	3,879	6	6	6	30	1,122	1,126	1,146	1,137
PIA Post-Project SSPE (lb/year)																				
No Emergency Equipment	5,603	5,619	5,722	5,676	479	483	486	1,854	1,052	1,057	1,061	3,879	6	6	6	30	1,122	1,126	1,146	1,137
PIA Pre-Project PIA Total PTE	5,602	5,618	5,721	5,675	479	483	486	1,854	1,052	1,057	1,061	3,879	6	6	6	30	1,122	1,126	1,146	1,137
PIA Post-Project PIA Total PTE																				
PIA Policy 25 Post-Project PIA Total PTE																				
<b>California State Prison - Solano</b>																				
Coating: Wood Products	1,040	1,040	1,040	1,040	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	0	0	0	0
P-35-90	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	185	187	189	189
P-35-92	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	185	187	189	189
P-36-92	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	27	27	27	27
P-187-95	819	819	819	819	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	397	401	405	405
CSP Pre-Project SSPE (lb/year)	1,859	1,859	1,859	1,859	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	397	401	405	405
CSP Post-Project SSPE (lb/year)	1,859	1,859	1,859	1,859	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	397	401	405	405
P-27-95(a)	103	103	103	103	847	847	847	0.42	5,854	5,854	5,854	2.93	2	2	2	0.00	348	348	348	348
P-28-95(a)	409	409	409	409	938	938	938	0.47	4,315	4,315	4,315	2.16	2	2	2	0.00	308	308	308	308
P-29-95(a)	103	103	103	103	847	847	847	0.42	5,854	5,854	5,854	2.93	2	2	2	0.00	348	348	348	348
P-30-95(a)	409	409	409	409	938	938	938	0.47	4,315	4,315	4,315	2.16	2	2	2	0.00	308	308	308	308
P-31-95(a)	356	356	356	356	816	816	816	0.41	3,752	3,752	3,752	1.88	2	2	2	0.00	268	268	268	268
P-64-04	19	19	19	0.01	83	83	83	0.04	805	805	805	0.14	34	34	34	0.00	13	13	13	13
P-51-10	83	83	83	0.04	65	65	65	0.03	271	271	271	0.14	0	0	0	0.00	16	16	16	16
CSP Pre-Project PIA Total PTE	3,342	3,342	3,342	3,342	4,534.07	4,534.07	4,534.07	2.27	25,165.90	25,165.90	25,165.90	12.58	45.44	45.44	45.44	0.01	2,006.44	2,010.49	2,014.54	2,014.54
CSP Post-Project PIA Total PTE	3,342	3,342	3,342	3,342	4,534.07	4,534.07	4,534.07	2.27	25,165.90	25,165.90	25,165.90	12.58	45.44	45.44	45.44	0.01	2,006.44	2,010.49	2,014.54	2,014.54
CSP Policy 25 Post-Project PIA Total PTE	1,859	1,859	1,859	1,859	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	396.50	400.55	404.60	404.60
<b>California Medical Facility</b>																				
Coating: Metal Parts & Wood Products	4,069	4,069	4,069	4,069	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	0	0	0	0
P-72-88	55	55	55	0.11	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	605	605	605	605
P-42-90(a3)	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00	0	0	0	0
P-37-92	6,571	6,644	6,717	6,717	20,802	21,033	21,265	39.29	20,505	20,733	20,961	38.73	310	314	317	0.59	172	174	176	176
P-130-95(a)	532	538	544	544	7,510	7,510	7,510	12.70	4,306	4,336	4,336	6.86	58	59	59	0.12	735	744	752	752
P-9-00	532	538	544	544	7,510	7,510	7,510	12.70	4,306	4,336	4,336	6.86	58	59	59	0.12	735	744	752	752
P-10-00	469	474	480	480	5,689	5,722	5,776	11.25	3,797	3,823	3,849	6.04	51	52	52	0.10	648	656	663	663
P-11-00																				



Boiler (12.6 MMbtu/hr)		P-12-00												P-12-00											
CMF Pre-Project SSPE (lb/year)		12,378	12,469	150	151	153	153	0.30	2,336	2,354	2,371	2,371	3.85	1,221	1,230	1,238	1,238	1.93	463	501	504	504	504	504	504
CMF Post-Project SSPE (lb/year)		12,378	12,469	12,562	12,562	12,562	12,562	48,060	43,827	44,129	44,432	44,432	159,580	34,135	34,458	34,720	34,720	120,840	463	501	504	504	504	504	504
Emergency IC Engine (429 BHP)		9	9	9	9	9	9	0.00	18	18	18	18	0.01	99	100	100	100	0.05	2	2	2	2	2	2	2
Emergency IC Engine (469 BHP)		18	18	18	18	18	18	0.01	40	40	40	40	0.02	189	191	193	193	0.10	3	3	3	3	3	3	3
Emergency IC Engine (375 BHP)		15	15	15	15	15	15	0.01	36	36	36	36	0.02	165	165	165	165	0.08	5	5	5	5	5	5	5
Emergency IC Engine (2847 BHP)		163	163	163	163	163	163	0.08	439	439	439	439	0.22	6,854	6,854	6,854	6,854	3.43	230	230	230	230	230	230	230
Emergency IC Engine (1102 BHP)		58	58	58	58	58	58	0.03	30	30	30	30	0.13	262	262	262	262	0.13	0	0	0	0	0	0	0
CMF Pre-Project PIA Total PTE		12,641	12,732	12,825	12,825	12,825	12,825	24.16	44,390	44,692	44,995	44,995	80.19	41,704	42,030	42,294	42,294	64.21	733	741	744	744	744	744	744
CMF Post-Project PIA Total PTE		12,641	12,732	12,825	12,825	12,825	12,825	24.16	44,390	44,692	44,995	44,995	80.19	41,704	42,030	42,294	42,294	64.21	733	741	744	744	744	744	744
CMF Policy 25 Post-Project PIA Total PTE		12,378	12,469	12,562	12,562	12,562	12,562	24.03	43,827	44,129	44,432	44,432	78.79	34,135	34,458	34,720	34,720	60.42	463	501	504	504	504	504	504

### Facility Quarterly Potential to Emit

	Quarter #1	Quarter #2	Quarter #3	Quarter #4	Yearly
VOC	19,839	19,946	20,142	20,096	36,93
CO	44,306	44,612	44,918	44,918	83,38
NOx	35,187	35,515	35,781	35,781	78,73
SOx	499	507	510	510	1,10
PM10	4,621	4,658	4,709	4,700	9,87

### OFFSET THRESHOLDS

	(lb/qr)
VOC	7,500
CO	49,500
NOx	7,500
SOx	13,650
PM10	13,650

### PTE Comparison to NSR Triggers

	Quarter #1	Quarter #2	Quarter #3	Quarter #4
VOC	Above	Above	Above	Above
CO	Below	Below	Below	Below
NOx	Above	Above	Above	Above
SOx	Below	Below	Below	Below
PM10	Below	Below	Below	Below

### Post-project Stationary Source Potential to Emit (SSPE)

	Yearly
VOC	72,120
NOx	124,719

### MITIGATION THRESHOLDS

	(lb/year)
VOC	20,000
NOx	20,000

### SSPE Comparison to Rule 3.20 Triggers

	Annual
VOC	Above
NOx	Above

COMMENTS: This quarterly PTE evaluation was updated for the Prison Industry Authority ATC application C-10-123 (Graphic Arts Operation).

Engineer:

Date:

7/18/11

Reviewed by:

Date:

7/18/11

**YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT**  
1947 Galileo Ct., Suite #103, Davis, Ca 95616

**New Source Review  
Last Five Year Activity**

Evaluator: Kyle Rohlfing

SIC Code # 9223

Facility Name: CMF, CSP, and PIA

Date of Initial Determination: 03/21/2003

Date of Previous Determination: 04/18/2011

Date of Current Determination: 06/20/2011

Location: 1600 California Drive and 2100 Peabody Road; Vacaville, CA

Facility	Process	Issued Permits	Date PTO Issued	ATC	Date ATC Issued	VOC (tpy)	CO (tpy)	NOx (tpy)	SOx (tpy)	PM10 (tpy)
CSP	Coating: Automotive	P-53-88	-	-	-	2.88	0.00	0.00	0.00	0.06
PIA	Metal Grinding	P-48-97	11/05/1997	C-97-47	06/05/1997	0.00	0.00	0.00	0.00	0.06
CMF	Non-Retail GDF	P-42-90(a)	12/22/1997	C-97-112	11/17/1997	0.05	0.00	0.00	0.00	0.00
PIA	Institutional Laundry	P-55-97	12/22/1997	A-54-97	12/22/1997	0.06	0.23	1.11	0.01	0.13
PIA	Coating: Metal Parts	P-41-88(a)	10/06/1999	C-99-80	07/28/1999	0.68	0.34	1.60	0.01	1.05
CMF	Boiler (44.8 MMBtu/hr) <sup>a</sup>	P-9-00	05/26/2000	C-99-102	01/26/2000	0.00	0.00	0.00	0.00	0.00
CMF	Boiler (44.8 MMBtu/hr) <sup>a</sup>	P-10-00	05/26/2000	C-99-103	01/26/2000	0.00	0.00	0.00	0.00	0.00
CMF	Boiler (39.5 MMBtu/hr) <sup>a</sup>	P-11-00	05/26/2000	C-99-104	01/26/2000	0.00	0.00	0.00	0.00	0.00
CMF	Boiler (12.6 MMBtu/hr) <sup>b</sup>	P-12-00	05/26/2000	C-99-105	01/26/2000	0.00	0.00	0.00	0.00	0.00
CMF	IC Engine Co-Generation	P-130-95(a)	03/27/2003	C-03-46	03/25/2003	0.00	10.33	0.00	0.00	0.04
CMF	Emergency IC Engine	P-7-98(a)	04/24/2003	C-03-21	03/07/2003	0.01	0.06	2.68	0.11	0.01
CSP	Emergency IC Engine	P-64-04	09/28/2004	C-02-360	05/20/2003	0.01	0.04	0.40	0.02	0.01
PIA	Coating: Metal Parts <sup>c</sup>	P-41-88(a1)	11/12/2004	C-02-142	09/29/2003	0.00	0.36	0.00	0.00	0.00
PIA	Coating: Metal Parts <sup>c</sup>	P-22-04	03/26/2004	C-03-75	09/29/2003	-	-	-	-	-
CMF	Non-Retail GDF	P-42-90(a1)	09/09/2005	C-05-35	06/08/2005	0.02	0.00	0.00	0.00	0.00
PIA	Metal Grinding <sup>d</sup>	P-48-97(a)	-	C-05-93	CANCELED	-	-	-	-	-
PIA	Letterpress and Silkscreen	P-77-92(a)	-	C-06-64	05/21/2007	0.00	0.00	0.00	0.00	0.00
CMF	Emergency IC Engine	P-70-07	-	C-07-124	11/02/2007	0.03	0.13	1.09	0.00	0.02
PIA	Mcoating: Metal Parts	-	-	C-07-176	08/05/2008	0.00	0.00	0.00	0.00	0.00
CSP	Emergency IC Engine	-	-	C-08-258	01/07/2010	0.03	0.14	0.00	0.01	0.00
CMF	Non-Retail GDF	P-42-90(a2)	01/07/2010	C-09-53	03/24/2009	0.00	0.00	0.00	0.00	0.00
CMF	Non-Retail GDF	P-42-90(a3)	06/03/2010	C-09-159	02/01/2010	0.04	0.00	0.00	0.00	0.00
PIA	Coating: Automotive	P-53-88(a)	12/20/2010	C-10-30	10/29/2010	0.00	0.00	0.00	0.00	0.22
PIA	Letterpress and Silkscreen	P-77-92(a1)	-	C-10-123	PENDING	0.00	0.00	0.00	0.00	0.00
CSP	Emergency IC Engine	P-27-95(a)	-	C-11-13	PENDING	0.05	0.42	2.93	0.00	0.17
CSP	Emergency IC Engine	P-28-95(a)	-	C-11-14	PENDING	0.20	0.47	2.16	0.00	0.15
CSP	Emergency IC Engine	P-29-95(a)	-	C-11-15	PENDING	0.05	0.42	2.93	0.00	0.17
CSP	Emergency IC Engine	P-30-95(a)	-	C-11-16	PENDING	0.20	0.47	2.16	0.00	0.15
CSP	Emergency IC Engine	P-31-95(a)	-	C-11-17	PENDING	0.18	0.41	1.88	0.00	0.13
<b>TOTAL</b>						<b>0.79</b>	<b>2.46</b>	<b>13.14</b>	<b>0.01</b>	<b>1.03</b>

<sup>a</sup>. Split of P-8-72(a) into C-99-102, C-99-103, and C-99-104 with no emission aggregate.

<sup>b</sup>. PTO P-89-89 replaced with equipment authorized by C-99-105 with no emission aggregate.

<sup>c</sup>. Split of P-41-88(a) into C-02-142 and C-03-75. Because C-02-142 and C-03-75 are part of a cap, the emission aggregate represented under C-02-142.

<sup>d</sup>. ATC C-05-93 and PTO P-48-97 canceled on 3/8/2006; operation deemed exempt from air quality permitting.

**COMMENTS:**

These permits are sorted by the ATC issuance dates. According to Rule 3.4 Section 221, a major modification is calculated based on all creditable increases and decreases from the source over the period of five consecutive years before the application, including the calendar year of the most recent application. Since ATC applications C-11-13 through C-11-17 were received on January 7, 2011, the applicable 5-year period ranges from January 2006 to January 2011.

Engineer:

*Kyle Rohlfing*

Date:

*7/12/11*

Reviewed by:

*Susan K. O'Connell*

Date:

*7/15/11*